WHAT IS CLAIMED IS:

1. A method of processing a fiber sample taken from a supply of fibers, the steps comprising:

providing an assembly of elongated fibers disposed side-by-side and arranged with the lengths of the individual fibers extending in a direction that is generally parallel to each other;

disposing said fiber assembly atop an array of aligned fiber combs including at least a first fiber comb disposed parallel to and in front of a second fiber comb;

moving the open jaws of a gripper comb toward said fiber assembly until said gripper comb is disposed at a first distance from said first fiber comb and at least some of the fibers of said fiber assembly project into said jaws of said gripper comb;

closing said jaws of said gripper comb to hold said fibers projecting into said jaws of said gripper comb;

moving said closed jaws of said gripper comb away from said fiber assembly;

opening said jaws of said gripper comb to release said fibers projecting into said jaws of said gripper comb;

suctioning away said released fibers from said jaws of said gripper comb;

determining whether the fibers remaining atop said array of fiber combs has attained the end-aligned condition;

upon determining the absence of the end-aligned condition, moving the open jaws of the gripper comb toward said fiber assembly until said gripper comb is disposed at a second distance from said first fiber comb that is less than said first distance and at least some of the remaining fibers of said fiber assembly project into said jaws of said gripper comb;

closing said jaws of said gripper comb to hold said fibers projecting into said jaws of said gripper comb;

moving said closed jaws of said gripper comb away from said fiber assembly;

opening said jaws of said gripper comb to release said fibers projecting into said jaws of said gripper comb;

suctioning away said released fibers from said jaws of said gripper comb;

determining whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been attained;

upon determining that the end-aligned condition in the fibers remaining atop said array of fiber combs has been attained, removing said first fiber comb from said array of fiber combs;

moving the open jaws of the gripper comb toward said fiber assembly until said gripper comb is disposed at a third distance from said second fiber comb that permits the ends of the remaining fibers carried by said second fiber comb to project into said jaws of said gripper comb; and

closing said jaws of said gripper comb to hold said fibers projecting into said jaws of said gripper comb, said fibers projecting into said jaws of said gripper comb composing said sample of end-aligned fibers.

2. A method as in claim 1, further comprising the steps of:

moving said closed jaws of said gripper comb with said sample of end-aligned fibers away from said array of fiber combs; and

transferring said end-aligned fiber sample to a testing station.

3. A method as in claim 2, further comprising the step of:

at the testing station, determining the short fiber content of the end-aligned fiber sample.

4. A method as in claim 1, wherein said step of providing an assembly of elongated fibers disposed side-by-side and arranged with the lengths of the individual fibers extending in a direction that is generally parallel to each other includes:

preparing a sliver from the supply of fiber from which the sample is to be composed.

5. A method as in claim 1, wherein said step of providing an assembly of elongated fibers disposed side-by-side and arranged with the lengths of the individual fibers extending in a direction that is generally parallel to each other includes:

using an aeromechanical individualiser to prepare a sliver from the supply of fiber from which the sample is to be composed.

6. A method as in claim 5, wherein said step of using an aeromechanical individualiser to prepare a sliver includes:

introducing fibers into a rapidly rotating, perforated chamber with a channel defined around its inner surface and accumulating fibers in said channel until said channel contains said sliver.

7. A method as in claim 1, wherein said step of determining whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been attained includes:

scanning the edges of the remaining fibers in said fiber assembly projecting from said first fiber comb.

8. A method as in claim 7, wherein said step of scanning the edges of the remaining fibers in said fiber assembly projecting from said first fiber comb includes:

using an optical scanner.

9. A method as in claim 1, further comprising the steps of:

measuring the proportion of short fibers in said end-aligned sample by successively moving said gripper comb containing said end-aligned fiber sample a predetermined short distance away from said array of fiber combs and using an optical sensor to measure the optical mass of fibers at said predetermined short distance relative to said array of fiber combs.

10. An apparatus for aligning one end of a fiber sample before testing, the sample including an assembly of elongated fibers disposed side-by-side and arranged with the lengths of the individual fibers extending in a direction that is generally parallel to each other, the apparatus comprising:

an array of aligned fiber combs, said array of fiber combs including at least a first fiber comb and a second fiber comb disposed parallel to and behind said first fiber comb, said array of fiber combs being configured to receive the fiber sample resting with the direction of elongation of the fiber strands in said sample generally disposed transversely to the parallel direction of said first and second fiber combs;

a gripper comb disposed in front of said first fiber comb, said gripper comb having at least two jaws disposed in opposition to each other and configured to selectively move toward and away from each other to selectively close and open, respectively;

a first carriage carrying said gripper comb;

a first drive unit, said first drive unit being connected to said first carriage and configured to translate said first carriage and said gripper comb selectively toward and away from said array of fiber combs by pre-selected distances;

a suction device disposed to vacuum fibers from said jaws of said gripper comb when said drive unit translates said gripper comb to a location sufficiently

distant from said array of fiber combs so as not to vacuum fibers from said array of fiber combs at the same time as fibers are being vacuumed from said jaws of said gripper comb; and

a detection device, said detection device including a sensor disposed between said first comb and said gripper comb, said detection device being configured to determine whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been produced.

11. An apparatus as in claim 10, wherein said detection device includes:

a control unit connected to receive signals from said sensor and programmed to interpret signals received from said sensor to determine whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been produced.

12. An apparatus as in claim 11, wherein said control unit is connected to said gripper comb, said first drive unit and said suction device and programmed to control operation of said gripper comb, said first drive unit and said suction device.

13. An apparatus as in claim 11 further comprising:

a frame supporting said array of fiber combs, one end of said first fiber comb being pivotally mounted with respect to said frame, said first fiber comb defining an elongated slot; and

a vertically translatable piston rod having one end pivotally connected to ride within said slot of said first fiber comb.

14. An apparatus as in claim 10, further comprising:

a second drive unit carrying said first drive unit, said second drive unit being configured to translate said first drive unit, said first carriage and said gripper comb selectively toward and away from said array of fiber combs.

15. An apparatus as in claim 10, further comprising:

a support platform disposed beneath said array of fiber combs, said gripper comb and said first drive unit.

16. An apparatus as in claim 15, wherein said suction device comprises a collection chamber disposed beneath said support platform and configured for collection of fibers vacuumed away from said jaws of said gripper comb.

17. An apparatus as in claim 15, further comprising:

an aeromechanical individualizer for preparing a fiber sample for reception by said array of fiber combs, said aeromechanical individualizer being connected to said support platform.

18. An apparatus for aligning at substantially the same time, one end of each of at least two fiber samples before testing, each of the samples including an assembly of elongated fibers disposed side-by-side and arranged with the lengths of the individual fibers extending in a direction that is generally parallel to each other, the apparatus comprising:

an array of aligned fiber combs, said array of fiber combs including at least a first fiber comb and a second fiber comb disposed parallel to and behind said first fiber comb, said array of fiber combs being configured to receive at least two discrete fiber samples, each fiber sample resting with the direction of elongation of the fiber strands in said sample generally disposed transversely to the parallel direction of said first and second fiber combs;

at least a first gripper comb and a second gripper comb disposed adjacent said first gripper comb, said gripper combs being connected to move in unison, each said gripper comb being disposed in front of said first fiber comb, each said gripper comb having at least two jaws disposed in opposition to each other and configured to

selectively move toward and away from each other to selectively close and open, respectively; and

a first carriage carrying said gripper combs; and

a first drive unit, said first drive unit being configured to translate said first carriage and said gripper combs together selectively toward and away from said array of fiber combs by pre-selected distances.

19. An apparatus as in claim 18, further comprising:

a suction device disposed to vacuum fibers from said jaws of said gripper combs when said first drive unit translates said gripper combs to a location sufficiently distant from said array of fiber combs so as not to vacuum fibers from said array of fiber combs at the same time as fibers are being vacuumed from said jaws of said gripper combs.

20. An apparatus as in claim 18, further comprising:

a detection device, said detection device including a sensor disposed between said first comb and said gripper combs, said detection device being configured to determine whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been attained.

21. An apparatus as in claim 20, wherein said detection device includes:

a control unit connected to receive signals from said sensor and programmed to interpret signals received from said sensor to determine whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been attained.

22. An apparatus for automatically successively testing multiple fiber samples, each of the samples including an assembly of elongated fibers disposed side-by-side and arranged with the lengths of the individual fibers extending in a direction that is generally parallel to each other, the apparatus comprising:

the apparatus of claim 18;

a testing station disposed beside and spaced apart from said apparatus of claim 18;

a first pick and place mechanism disposed between said testing station and said apparatus of claim 18, said first pick and place mechanism being configured for acquiring said gripper combs together, said first pick and place mechanism being further configured for translating said gripper combs together from said apparatus of claim 18 to said testing station, and said first pick and place mechanism being configured for positioning at least one of said gripper combs for testing at said testing station.

23. An apparatus as in claim 22, further comprising:

a holding station spaced apart from each of said apparatus of claim 16 and said testing station, said holding station being disposed beside at least one of said apparatus of claim 18 and said testing station;

a second pick and place mechanism disposed between said holding station and at least one of said testing station and said apparatus of claim 18, said second pick and place mechanism being configured for acquiring said gripper combs together, said second pick and place mechanism being further configured for translating said gripper combs together between said holding station and one of said apparatus of claim 18 and said testing station, and said second pick and place mechanism being configured for positioning at least one of said gripper combs for holding at said holding station.

24. An apparatus as in claim 22, wherein said first pick and place mechanism comprises:

a track disposed above at least said apparatus as in claim 18.

25. An apparatus as in claim 24, wherein said first pick and place mechanism comprises:

a trolley configured and disposed to travel along said track;

a gripping arm configured to selectively grip and release said connected together gripper combs;

a telescoping member having one end connected to said trolley and an opposite end connected to said gripping arm, the distance between said opposite ends of said telescoping member being selectively variable.

26. A method of simultaneously processing multiple fiber samples from a supply of fibers, the steps comprising:

providing a plurality of discrete assemblies of elongated fibers disposed side-by-side and with each discrete assembly being arranged with the lengths of the individual fibers extending in a direction that is generally parallel to each other;

disposing each said discrete fiber assembly atop an array of aligned fiber combs including at least a first fiber comb disposed parallel to and in front of a second fiber comb;

simultaneously moving the open jaws of each of a plurality of gripper combs toward said fiber assemblies until each said gripper comb is disposed at a first distance from said first fiber comb and at least some of the fibers of one of said fiber assemblies project into said jaws of one of said gripper combs;

closing said jaws of each said gripper comb to hold at least some of the fibers projecting into said jaws of each said gripper comb;

simultaneously moving said closed jaws of each said gripper comb away from said fiber assemblies;

removing from said jaws of each said gripper comb said fibers projecting into said jaws of each said gripper comb;

determining whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been attained;

upon determining the absence of the end-aligned condition, simultaneously moving the open jaws of the gripper combs toward said fiber assembly until each said gripper comb is disposed at a second distance from said first fiber comb that is less than said first distance and at least some of the remaining fibers of said fiber assemblies project into said jaws of at least one said gripper comb;

closing said jaws of at least one said gripper comb into which fibers are projecting to hold at least some of said fibers projecting into said jaws of said gripper comb;

moving said closed jaws of said gripper comb away from said fiber assembly;

removing from said jaws of said gripper comb said fibers projecting into said jaws of said gripper comb;

determining whether the end-aligned condition of the fibers remaining atop said array of fiber combs has been attained;

upon determining that the end-aligned condition in the fibers remaining atop said array of fiber combs has been attained, removing said first fiber comb from said array of fiber combs;

simultaneously moving the open jaws of the gripper combs toward said fiber assemblies until said gripper combs are disposed at a third distance from said second fiber comb that permits the ends of the remaining fibers carried by said second fiber comb to project into said open jaws of said gripper combs; and

closing said jaws of said gripper comb to hold said fibers projecting into said jaws of said gripper combs, each discrete assembly of said fibers projecting into said jaws of said gripper combs composing a discrete sample of end-aligned fibers.

27. A method of processing fiber samples comprising the steps of:

performing the method of claim 26; and

transferring said end-aligned fiber samples to a testing station.

28. A method as in claim 27, further comprising the step of:

at the testing station, determining the short fiber content of a first one of the end-aligned fiber samples.

29. A method as in claim 28, further comprising the step of:

at the testing station, determining the short fiber content of a second one of the end-aligned fiber samples.